

# Use the light

From smoke signals to carrier pigeons, to letters sealed in wax, communication was never the same after we saw the light



*Too much to download, not enough time?* **EUREKA!**

Using the speed of **light** to transmit **information** via an optical fibre led to a breakthrough in communication capacity in the early 1990s.



Allan Snyder, a physicist, explained exactly how light travels down a fibre, what dimensions the fibre needs to be and how to convert the pulses into information at the other end. His description simplified an existing theory, which laid the foundation for **fibre optic technology**.

Semiconductor lasers were used as the source of light. Then the carrying capacity was boosted by sending many different wavelengths of light down one fibre at a time. This process is called wavelength division multiplexing.



## WHAT NEXT?

Taking the speed of light inside your computer. Researchers are looking at hybrid computers that combine the efficiency of electricity for controlling switches and optics for transferring information.

Fibre optic technology is branching out into the medical, power, automotive, construction and defence fields.

**Health**—made in Perspex, and at a tenth the thickness of a normal endoscope, fibre optics can move into blood vessels and other tricky spots improving imaging techniques.

**Industry**—measuring, monitoring, sensing and transmitting information in dangerous situations such as refineries and mines where electricity can cause a spark.

**Defence**—overtaking huge rotating radar dishes, a mobile radar system run on light can now be fitted onto aircraft wings or the mast of a ship.<sup>1</sup>

1. Australian Photonics Cooperative Research Centre ([www.photonics.com.au](http://www.photonics.com.au)).